Cattle Grazing in a Community Watershed near Salmon Arm

Complaint Investigation 010353

FPB/IRC/72

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The Investigation

On November 15, 2001, the Freeman Brook Community Waterworks Association (the complainant) submitted a complaint to the Forest Practices Board about the control of cattle around several small streams near Freeman Brook, northwest of Salmon Arm. The complainant claimed there were multiple contraventions of the range use plan by Grouse Creek Ranch (the licensee). The complainant also asserted that the Ministry of Forests (MOF) didn't enforce the requirements of the range use plan. The Board decided to investigate whether the grazing and range practices complied with the *Forest Practices Code of British Columbia Act* (the Act) and regulations, and whether the requirements of the range use plan were enforced by MOF.

Background

Freeman Brook is approximately 70 kilometres northwest of Salmon Arm, within the Corning Creek community watershed. The complainant has a domestic water intake and two water storage ponds downstream of a range use area. The water intake draws water from Freeman Brook and services 11 households. A grazing licence allows cattle to graze in a hydro line right-of-way upstream of the water intake.

The complainant raised concerns with MOF that cattle would contaminate the domestic water supply and asked that the cattle be excluded from the right-of-way west of Freeman Brook. MOF refused, but offered to test the water during the grazing season. If the cattle impacted water quality, MOF would manage the range to minimize those impacts.

Water samples were taken from Freeman Brook from May to July 2000. In the spring of 2001, MOF did not do further water testing, but ordered the licensee to build an electric fence around the two channels of Freeman Brook where it crosses the right-of-way. The fence restricted cattle from crossing the creeks except along an access road in the right-of-way. This allowed the cattle to continue to use range area to the west of Freeman Brook, which contains two small swamps. The complainant stated that in the spring, the water from the swamps flows into a small creek that flows into Freeman Brook. The complainant calls this seasonal creek Sweetwater Creek, and maintains that the swamps result from springs it calls Sweetwater Springs. The complainant believed that cattle grazing in and near the swamps would contaminate Sweetwater Creek, which would contaminate their domestic water supply. Therefore, the complainant wanted cattle excluded from the two swamps.

In the fall of 2001, the licensee, complainant and several government specialists visited the area. On October 24, 2001, the MOF district manager decided that the licensee should keep cattle out of the two channels of Freeman Brook. Cattle would be excluded using a combination of permanent fencing and physical barriers. The permanent fencing would

replace the temporary electric fences. As well, salt blocks would be placed to attract and move cattle away from the swamps west of Freeman Brook.

The complainant believed these cattle control measures were inadequate to prevent contamination of the domestic water supply. The complainant wanted additional fencing around the swamps and around Freeman Brook.

Issues

The Board examined the following questions:

- Did grazing and range practices comply with the range use plan?
- Did the licensee and MOF allow fecal contamination of streams?
- Were the requirements of the range use plan enforced by MOF?

Discussion

Did grazing and range practices comply with the range use plan?

The complainant asserted that the licensee did not comply with many requirements of the range use plan during the 2001 grazing season. The complainant raised issues with the signatures on the range use plan, the number of cattle grazing the area, grazing cattle contrary to the grazing schedule, placement of salt and failure to meet water quality objectives. Section 98 of the Act states that a person must not allow livestock to graze on Crown range unless the person is acting in accordance with the range use plan.

The Board reviewed the requirements of the range use plan and the Act and concluded that the licensee complied with the requirements, except in one instance. The range use plan stated that salt would not be used west of Freeman Brook in order to keep the cattle from congregating around the stream. Fences were constructed around the streams, and with MOF's agreement, salt was used west of Freeman Brook to move the cattle past the fences. Fences were added after the approval of the range use plan and therefore are not mentioned in it. These management practices met the range use plan objective to maintain water quality by ensuring that livestock did not congregate around Freeman Brook. Consequently, the Board concludes that the non-compliance was not significant.

Did the licensee and MOF allow fecal contamination of streams?

The complainant said the licensee and MOF contravened the range use plan by allowing cattle to contaminate Freeman Brook. The complainant also asserted that, contrary to the *Community Watershed Guidebook* (the guidebook) and section 7 of the *Range Practices Regulation*, the licensee and district manager allowed cattle to defecate and contaminate Sweetwater Spring and Sweetwater Creek within 850 metres of the domestic water intake.

Section 7(3) of the *Range Practices Regulation* states that a licensee must not allow livestock to use riparian areas in a community watershed if the district manager determines that use by cattle could be detrimental. Specifically, the district manager must first decide that cattle use would cause detrimental levels of fecal deposits, trampling of vegetation, deposit of sediments or exposure of mineral soil in the riparian area.

The guidebook addresses range management in community watersheds. The recommendations in the guidebook are not mandatory requirements, but they provide useful advice regarding management of cattle in community watersheds. The guidebook recommends that riparian areas within one kilometre of the intake be restricted to light occasional range use. It also recommends that a 30-metre-wide band on each side of the stream, for a distance of one kilometre above an intake, should be managed to prevent contamination from cattle defecating directly into the stream, or runoff of fecal deposits close to the stream. Lastly, the guidebook recommends that the 30-metre zone should be widened where site conditions would contribute to direct runoff into the stream. Examples are steep, wet slopes directly above the stream, floodplains with soft alluvial sediments and high water tables and areas with very sparse riparian vegetation cover.

Freeman Brook

The range use plan states that the licensee must ensure livestock do not cause fecal contamination, sedimentation or trampling of stream banks. Did the licensee and MOF contravene the range use plan by allowing cattle to contaminate Freeman Brook?

From May 15, 2000, to July 17, 2000, eight water tests were taken at each of three locations along Freeman Brook. The samples were taken upstream and immediately below the right-of-way, and almost two kilometres downstream of the right-of-way. Water was tested for total coliform and fecal coliform bacteria. The coliform bacteria originating from fecal material pose a more serious health risk and tests for fecal coliform are preferred for assessing water quality. Total coliform includes a wide variety of bacteria, and tests for total coliform are not as reliable for identifying fecal contamination. However, total coliform tests are used because they indicate the adequacy of treatment of water supplies. In the absence of fecal coliform, the presence of total coliform may be due to relatively less recent fecal contamination or to normal indigenous bacteria.

During the testing, the licensee moved the cattle out of the Freeman Brook area after being told there were very high total coliform counts immediately after a heavy rainstorm. Subsequently, MOF had the licensee let the cattle back in, to establish if the cattle were having any impact. Cattle were then allowed to freely graze the right-of-way, randomly moving in and out of the Freeman Brook area. MOF noted that the water tests showed very high fecal coliform counts measured immediately below the right-of-way during livestock use and during heavy rainfalls. One sample taken just below the right-of-way recorded 2,400 coliforms per 100 millilitres of water. However, there were no corresponding high fecal coliform counts at the downstream water intake.

The water tests did indicate low total coliform counts at the water intake on four dates, ranging from 1 to a high of 11 total coliforms per 100 millilitres of water. However, there were also corresponding levels measured above the right-of-way on those dates. This indicated that the cattle were not the source of total coliform; it was likely the result of wildlife. No fecal coliform was detected at the water intake at any time, although the number of water samples was small. MOF concluded that the water tests showed that fecal coliform was present in Freeman Brook at the hydro right-of-way, but not downstream at the water intake. An environmental health officer with the Thompson Health Region visited Freeman Brook and supported this conclusion. He noted that there was wildlife in the area, so streams in the area were normally contaminated on a year-round basis. He concluded that the presence of cattle could have an impact to surface water (streams), but it would be minimal.

On July 24, 2000, MOF staff inspected the area adjacent to Freeman Brook to evaluate the impact of grazing. MOF concluded that the overall health and vigour of the riparian vegetation was excellent and the integrity of the stream channel and vegetation had been maintained in over 95 percent of the creeks, and forage use was moderate. As well, on August 10, 2000, two Ministry of Environment, Lands and Parks (MELP, now the Ministry of Water, Land, and Air Protection) staff inspected the range area and concluded that the impact to riparian vegetation, stream bank integrity and water quality was minimal. They supported continued use of the range.

On August 31, 2000, the district manager told the complainant that after considering the advice of MELP and the results of the water tests done in 2000, he would allow grazing to continue on the right-of-way. He also stated that MOF would continue to monitor range use in the area and, if grazing exceeded moderate use, he would require fencing around Freeman Brook.

In the spring of 2001, MOF decided to experiment with fencing off the two channels of Freeman Brook in the right-of-way, stating that cattle would be kept out of areas that had surface water flowing to the water intake. The district manager stated that there had been no detrimental impact as a result of the cattle grazing, and his decision stemmed from the heightening standard of maintaining quality drinking water and the high consequences of water contamination. The district manager explained that he made a conservative decision to keep the cattle out of Freeman Brook, thus imposing more stringent restraints on cattle use than recommended in the guidebook. These decisions are consistent with the guidebook recommendation of light range use, and of keeping cattle out of streams for one kilometre above domestic water intakes.

In summary, MOF tested the water quality in 2000. The tests illustrate that, while range use contributed fecal coliform to Freeman Brook, it did not pollute the water at the complainant's water intake. However, daily water sampling would be needed to definitively determine definitely the presence of coliforms.

The district manager had district staff and specialists from two other agencies examine the area. The district manager used this information to make a decision about the future management of right-of-way for grazing.

For these reasons, the Board concludes that the management of the range has minimized the risk of water contamination from cattle, consistent with the range use plan. Additionally, the district manager's conclusion that cattle grazing has not resulted in detrimental impacts to Freeman Brook was reasonable. There was no basis for, or need to, prohibit the licensee from allowing livestock to use riparian areas in the community watershed.

Sweetwater Creek

Did the licensee and district manager allow cattle to defecate and pollute Sweetwater Creek and Sweetwater Springs within one kilometre of the domestic water intake?

On June 27, 2001, an MOF hydrologist inspected the Freeman Brook area. Also on September 26, 2001, the licensee, the complainant and specialists from four government agencies went to Freeman Brook and discussed the range issues. The district manager asked that all participants submit their conclusions and concerns to him for use in deciding the future management of the range area.

An MOF range ecologist concluded that a surface water connection from the swamps to Sweetwater Creek might only exist for a short period of time each year at spring freshet, if at all. Furthermore, the ecologist stated that the site conditions would reduce the chance of bacteria reaching the stream.

The MOF hydrologist concluded that the likelihood of water contamination was low if the forested slopes above the water intake were not harvested. The hydrologist observed high concentration of cattle feces both adjacent to the area of open water in the swamp and at the forest-right-of-way edge. The hydrologist noted that there was a very small, rare possibility of water overflowing from the grazed areas of the right-of-way to the water intake. Where cattle have access to the surface water, the level of fecal contamination can be high. However, the hydrologist noted that, where water has been filtered through the soil—such as in reaches where the creek flows underground—water returns to its natural quality. The hydrologist noted that the middle reaches of Freeman Brook do not have defined channels, and concluded that such filtration would occur in most years.

A veterinarian for the Ministry of Agriculture, Food and Fisheries (MAFF) also concluded that cattle grazing did not create a significant risk to water quality at the intake. The chief environmental health officer for the Thompson Health Region similarly concluded that risks caused by cattle grazing were inconsequential when compared to the inherent risk the complainant had already accepted given the state of the domestic waterworks; specifically, that the use of surface water without filtration and disinfection means accepting the risk posed by bacterial, protozoal and chemical components in the watershed regardless of land use or agricultural practices. MAFF recommended that the water users explore a multiple

barrier approach to improve water quality, using simple natural filtration options such as an infiltration gallery combined with ultraviolet disinfection. The district agrologist for MAFF concluded that a permanent fence around Freeman Brook and upgrading of the water users' system would further reduce risks.

On October 24, 2001, the district manager decided that the range use plan should exclude cattle from the two channels of Freeman Brook. Cattle would be excluded using a combination of permanent fencing and physical barriers. As well, the district manager directed that cattle should be salted away from the swamp west of Freeman Brook.

Cattle were permitted to use the area west of Freeman Brook, which includes the two swamp areas. Reports from specialists on site indicate that cattle did wander into the swamp, and that there were feces near the swamps. The guidebook recommends there be only light range use, and that cattle should be kept out of streams for one kilometre above domestic water intakes. However, MOF staff did not find any surface water connection between the swamps and the start of Sweetwater Creek.

The Board finds that there are risks to water quality, but in this case they are low. The guidebook recommends that riparian areas within one kilometre above the intake should be managed to prevent contamination from cattle, and this includes areas where cattle defecate directly into streams or close to the stream subject to surface runoff. It is 895 metres along Sweetwater Creek from the right-of-way to the water intake. The specialists noted that risks of contamination might exist when the swamp reaches a water depth greater than one metre, and the swamp overflows into Sweetwater Creek. Risks to water quality in Freeman Brook may exist in years when excessive snow pack melts rapidly or when there are prolonged rains with saturated slopes. Management of the range must be cognizant of these risks.

In the current circumstances, the range practices follow those recommended in the guidebook. In terms of fecal contamination of Sweetwater Creek, the Board finds no evidence that the use of the area by cattle affected the water quality at the water intake 895 metres below the hydro right-of-way. Various specialists confirm that the risk of contamination is minimal. For these reasons, the Board finds that range use was consistent with the water quality objectives of the range use plan.

The Board concludes that management of the range has minimized the risk of water contamination from cattle, consistent with the range use plan. MOF directed the installation of a fence and physical barriers along the channels of Freeman Brook in the hydro line right-of-way. The district manager had at least five specialists from several government agencies review use of the range, and considered that information in his decisions. The district manager's conclusion that the cattle did not cause detrimental impacts to Freeman Brook was reasonable. There was no basis for, or need to, prohibit the licensee from allowing cattle to use riparian areas in this area of the community watershed.

Were the requirements of the range use plan enforced?

The complainant asserted that, despite numerous contraventions, MOF did not enforce the requirements of the range use plan.

The purpose of enforcement is to promote compliance with the Code. Enforcement activities generally begin with monitoring and inspections. If problems are discovered, there are a number of tools available to the ministries to promote compliance. These tools escalate in severity and include written instructions, stop-work orders, administrative penalties, prosecution and licence cancellation. Field inspections and monitoring are the most common activities in a ministry's enforcement program. These should be done at a frequency that is appropriate for the risk that exists to the resource.

Between May 1, 2000, and October 17, 2001, MOF staff visited the range area 10 times. During the grazing period of May 14 to June 30, 2001, MOF staff were on site three times. MOF staff notes did not reveal any non-compliance with the range use plan or the Forest Practices Code.

After examining the assertions of the complainant, the Board finds the licensee substantially complied with the range use plan. MOF adequately monitored the range and grazing of the range in 2001. MOF did not note any conditions warranting enforcement action. The requirements of the range use plan were appropriately enforced.

Conclusions

Did grazing and range practices comply with the range use plan?

The Board concludes that the requirements of the range use plan and the Forest Practices Code were complied with, except in one instance. The range use plan stated that salt would not be used west of Freeman Brook in order to keep the cattle from congregating around the stream. The Board concludes that the non-compliance was not significant, as fences were constructed around the streams and salt was used west of Freeman Brook to move the cattle past the fences, which met the range use plan objective to maintain water quality.

Did the licensee and MOF allow fecal contamination of streams?

The Board concludes that range management practices minimized the risk of water contamination from cattle, consistent with the range use plan. MOF tested the water quality in 2000 and the tests illustrate that, while range use contributed fecal coliform to Freeman Brook, range use did not pollute the water at the complainant's water intake. Furthermore, various specialists indicated that the risk of contamination to the domestic water supply was minimal. The Board concludes that the use of the range is consistent with the water quality objectives of the range use plan.

Were the requirements of the range use plan enforced by MOF?

The Board concludes that the licensee was in compliance with the range use plan. MOF monitored the range and grazing of the range in 2001 and did not note any conditions warranting enforcement action. The requirements of the range use plan were appropriately enforced.

Recommendations

This case revolves around water quality in a community watershed. The range use plan specifies an objective for range use to be consistent with water quality objectives set for the watershed, but government has not established water quality objectives for the Corning Creek community watershed. In order to manage both the community watershed and range use in the area, water quality objectives must be set, water quality measured regularly and range use must be managed to meet water quality objectives.

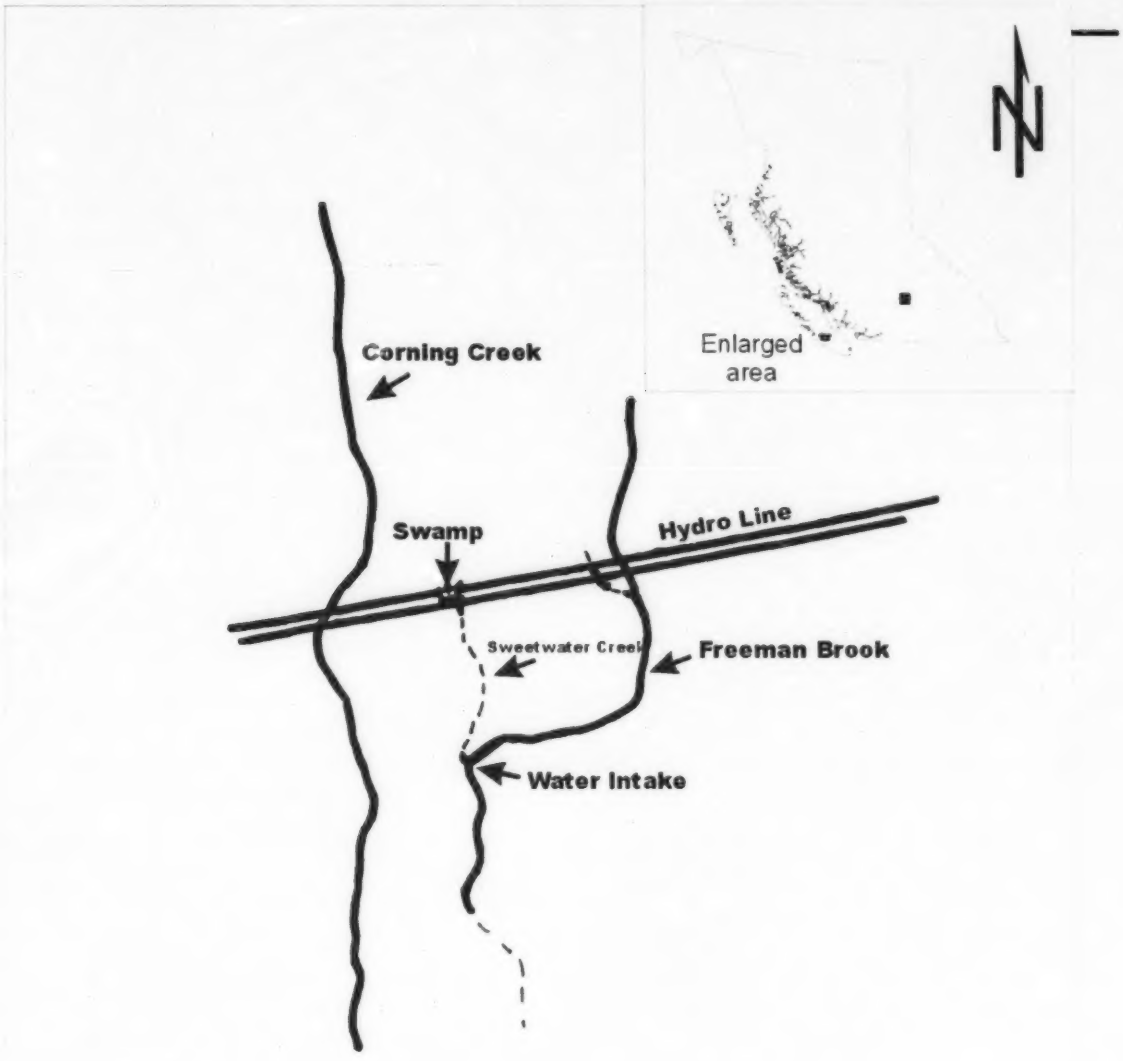
The Board also notes that the complainant has obligations as a water purveyor under the *Health Act*, and specifically under *the Safe Drinking Water Regulation*. The regulation states that a purveyor must monitor water potability, and ensure that water samples are taken in accordance with procedures established by the medical health officer or public health inspector.

In accordance with section 185 of the Act, the Board makes the following recommendation:

The Board recommends that the Thompson Region of the Ministry of Water, Land and Air Protection (MWLAP) begin monitoring water quality in the Corning Creek community watershed—including Freeman Brook—with the goal of setting objectives for water quality within the next four years. This allows for three years of water testing prior to setting the objectives. This includes testing water quality at the water intake. The complainant will have to meet its responsibility to monitor water potability in accordance with the *Safe Water Drinking Regulation* to complement MWLAP's establishment of water quality objectives.

In accordance with section 186 of the Act, the Board asks that MWLAP advise the Board by October 1, 2002, about the steps taken to address this recommendation.

Location of Complaint 010353 Freeman Brook



Note: Cattle are restricted to the hydro line right-of-way.